



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

May 13, 2011

Mr. M.E. Reddemann
Chief Executive Officer
Energy Northwest
P.O. Box 968, Mail Drop 1023
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION – NRC TEMPORARY
INSTRUCTION 2515/183 INSPECTION REPORT 05000397/2011007

Dear Mr. Reddemann:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station, using Temporary Instruction 2515/183, "Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event." The enclosed inspection report documents the inspection results which were discussed on May 2, 2011, with Mr. M. Reddemann and other members of your staff.

The objective of this inspection was to assess the adequacy of actions taken at Columbia Generating Station in response to the Fukushima Daiichi Nuclear Station fuel damage event. The results from this inspection, along with the results from similar inspections at other operating commercial nuclear plants in the United States, will be used to evaluate the United States nuclear industry's readiness to respond to a similar event. These results will also help the NRC to determine if additional regulatory actions are warranted.

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in a separate report. You are not required to respond to this letter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Energy Northwest

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Sincerely,

/RA/ By David L. Proulx

Wayne Walker, Chief
Project Branch A
Division of Reactor Projects

Docket: 50-397
License: NPF-21

Enclosure: NRC Inspection Report 05000397/2011007
w/Attachment: Supplemental Information

cc w/Encl:

Distribution via ListServ

Electronic distribution by RIV:

Regional Administrator (Elmo.Collins@nrc.gov)
 Deputy Regional Administrator (Art.Howell@nrc.gov)
 DRP Director (Kriss.Kennedy@nrc.gov)
 DRP Deputy Director (Troy.Pruett@nrc.gov)
 DRS Director (Anton.Vegel@nrc.gov)
 DRS Deputy Director (Vacant)
 Senior Resident Inspector (Ronald.Cohen@nrc.gov)
 Resident Inspector (Mahdi.Hayes@nrc.gov)
 Branch Chief, DRP/A (Wayne.Walker@nrc.gov)
 Senior Project Engineer, DRP/A (David.Proulx@nrc.gov)
 Site Administrative Assistant (Crystal.Myers@nrc.gov)
 Public Affairs Officer (Victor.Dricks@nrc.gov)
 Public Affairs Officer (Lara.Uselding@nrc.gov)
 Project Manager (Balwant.Singal@nrc.gov)
 Branch Chief, DRS/TSB (Michael.Hay@nrc.gov)
 RITS Coordinator (Marisa.Herrera@nrc.gov)
 Regional Counsel (Karla.Fuller@nrc.gov)
 NRR/DIRS/IRIB (Timothy.Kobetz@nrc.gov)
 Congressional Affairs Officer (Jenny.Weil@nrc.gov)
 OEMail Resource
 ROPreports
 RIV/ETA:OEDO (Stephanie.Bush-Goddard@nrc.gov)
 DRS/TSB STA (Dale.Powers@nrc.gov)

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SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	DP
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	DP
SRI:DRP/A	RI:DRP/A	RI:TSB	D:DRP/A		
RCohen	MHayes	ERuesch	WWalker		
DP for-E	DP for E	/RA/	DP for		
05/12/2011	05/12/2011	05/11/2011	05/11/2011		

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U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket	05000397
License	NPF-21
Report	05000397/2011007
Licensee	Energy Northwest
Facility	Columbia Generating Station
Location	Richland, WA
Dates	March 23, 2011 through April 29, 2011
Inspectors	R. Cohen, Senior Resident Inspector M. Hayes, Resident Inspector
Approved by	Wayne Walker, Chief, Project Branch A Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000397/2011007, 03/23/2011 – 04/29/2011; Columbia Generating Station; Temporary Instruction 2515/183 - Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event.

This report covers an announced temporary instruction inspection. The inspection was conducted by resident inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006."

INSPECTION SCOPE

The intent of the temporary instruction is to be a high-level look at the industry's preparedness for events that may exceed the design basis for a plant. The focus of the temporary instruction was on (1) assessing the licensee's capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats; (2) assessing the licensee's capability to mitigate station blackout conditions; (3) assessing the licensee's capability to mitigate internal and external flooding events required by station design; and (4) assessing the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. If necessary, a more specific follow-up inspection will be performed at a later date.

INSPECTION RESULTS

The following table documents the NRC inspection at Columbia Generating Station, performed in accordance with Temporary Instruction 2515/183. The numbering system in the table corresponds to the inspection items in the temporary instruction.

03.01 Assess the licensee’s capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats, committed to as part of NRC Security Order Section B.5.b issued February 25, 2002, and severe accident management guidelines and as required by Title 10 of the Code of Federal Regulations (10 CFR) 50.54(hh). Use Inspection Procedure 71111.05T, “Fire Protection (Triennial),” Section 02.03 and 03.03 as a guideline. If Inspection Procedure 71111.05T was recently performed at the facility, the inspector should review the inspection results and findings to identify any other potential areas of inspection. Particular emphasis should be placed on strategies related to the spent fuel pool. The inspection should include, but not be limited to, an assessment of any licensee actions to:

Licensee Action	Describe what the licensee did to test or inspect equipment.
<p>a. Verify through test or inspection that equipment is available and functional. Active equipment shall be tested and passive equipment shall be walked down and inspected. It is not expected that permanently installed equipment that is tested under an existing regulatory testing program be retested.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>The licensee tested active equipment, and walked down and inspected passive equipment. The licensee performed these activities in accordance with existing station procedures and preventative maintenance work orders. Some items were verified to be complete, if performed within the last month, through a review of completion paperwork; activities not accomplished within the last month were re-performed.</p>
	<p>Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).</p>
	<p>The inspectors reviewed the test results. The inspectors independently walked down the passive equipment and verified that the contents of the licensee’s emergency lockers were in accordance with station procedures. The inspectors discussed with plant and licensed operators how the active and passive equipment is tested, maintained, and stored, and training is conducted on its use. Additionally, the inspectors walked down several of the procedures with plant operators to ensure familiarity with the operation of the equipment, storage locations of portable equipment, and locations of permanently installed equipment.</p>

	Discuss general results including corrective actions by licensee.
	The licensee discovered several minor issues that did not affect the availability and function of equipment used to support B.5.b, the emergency plan, and severe accident management guidelines. These minor issues were entered into the licensee's corrective action program.
Licensee Action	Describe the licensee's actions to verify that procedures are in place and can be executed (e.g. walkdowns, demonstrations, tests, etc.).
<p>b. Verify through walkdowns or demonstration that procedures to implement the strategies associated with B.5.b and 10 CFR 50.54(hh) are in place and are executable. Licensees may choose not to connect or operate permanently installed equipment during this verification.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	The licensee performed a walkdown and reviewed the extreme damage mitigation guidelines and severe accident mitigation guidelines. The licensee concluded that the procedures were executable.
	Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.
	The inspector reviewed all the severe accident procedures and guidelines to ensure that the appropriate equipment, training, and staging were in place and those actions could be accomplished in accordance with the established timelines. The inspectors determined that the licensee's procedures were in place, effective, had been recently trained on, and could be implemented as intended. The inspectors walked down several strategies with plant operators to ensure that the operators knew where the equipment was located, how to operate the equipment, and the ease of use of the equipment.
	Discuss general results including corrective actions by licensee.
	The licensee's discovered several minor issues that did not affect the ability to execute the severe accident procedures. These minor issues were entered into the licensee's corrective action program.

Licensee Action	Describe the licensee's actions and conclusions regarding training and qualifications of operators and support staff.
<p>c. Verify the training and qualifications of operators and the support staff needed to implement the procedures and work instructions are current for activities related to Security Order Section B.5.b and severe accident management guidelines as required by 10 CFR 50.54 (hh).</p>	<p>Plant operators receive initial training on these severe accident procedures through walkdowns with qualified operators, which are required prior to initial watch standing. Continuing training for plant operators, accomplished in accordance with the plant operator requalification program, includes classroom training and walkthroughs of procedures. Licensed operators receive initial training on these severe accident procedures along with all emergency and off-normal operating procedures as part of initial licensed operator qualification. Continuing training for licensed operators is accomplished in accordance with the licensed operator requalification program. The emergency response organization training requirements are proceduralized in the emergency preparedness training program. Personnel on the emergency response roster must complete requalification training. Security officers are trained and qualified in the requirements of B.5.b.</p>
	<p>Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff.</p>
	<p>The inspectors reviewed the training records of plant and licensed operators and of emergency response roster personnel to ensure that they were still within their training window. The inspectors walked down and discussed several strategies with plant and licensed operators to ensure that the operators knew where the equipment was located, how to operate the equipment, the ease of use of the equipment, and could complete the procedures as written.</p>

	Discuss general results including corrective actions by licensee.
	The licensee's procedures were effective in ensuring that the desired action could be accomplished. The inspector identified no deficiencies during this review.
Licensee Action	Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.
<p>d. Verify that any applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of these events.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	The licensee reviewed its Letters of Agreement with state and local entities, required by NUREG 0654, "Emergency Support and Resources," to verify their adequacy and currency. Annually, in accordance with the licensee's emergency response procedures, the licensee reviews the Letters of Agreement for each offsite organization and ensures that all letters are current.
	For a sample of mitigating strategies involving contracts or agreements with offsite entities, describe inspector actions to confirm agreements and contracts are in place and current (e.g., confirm that offsite fire assistance agreement is in place and current).
	The inspectors reviewed the licensee's procedures for requiring the Letters of Agreement to be maintained current. Additionally, the inspectors reviewed a sample of Letters of Agreement for mutual aid and support and verified that they were current.
	Discuss general results including corrective actions by licensee.
	The licensee identified no deficiencies during this review. The inspectors verified that agreements and contracts are in place for mutual aid and support.

Licensee Action	Document the corrective action report number and briefly summarize problems noted by the licensee that have significant potential to prevent the success of any existing mitigating strategy.
e. Review any open corrective action documents to assess problems with mitigating strategy implementation identified by the licensee. Assess the impact of the problem on the mitigating capability and the remaining capability that is not impacted.	The licensee documented all items associated with the Fukushima event in Action Request 235848. The licensee identified the following discrepancies; procedure enhancements to provide more details related to equipment location and operation of equipment to enhance operator response time, evaluation of the storage of equipment that may be vulnerable to seismic activity, readability of fire main header gages, and the lack of spare parts for the B.5.b fire pump truck to address extended use. None of the identified gaps or deficiencies would be expected to impact the success of any severe accident mitigation capability. The inspectors reviewed these discrepancies and determined that the items identified in Action Request condition report 235848 would not impact the mitigating strategy implementation.

03.02 Assess the licensee's capability to mitigate station blackout conditions, as required by 10 CFR 50.63, "Loss of All Alternating Current Power," and station design is functional and valid. Refer to Temporary Instruction 2515/120, "Inspection of Implementation of Station Blackout Rule Multi-Plant Action Item A-22," as a guideline. It is not intended that Temporary Instruction 2515/120 be completely re-inspected. The inspection should include, but not be limited to, an assessment of any licensee actions to:	
Licensee Action	Describe the licensee's actions to verify the adequacy of equipment needed to mitigate a station blackout event.
a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.	The licensee performed inventories of Emergency Operating Procedure and Main Control Room Emergency supplies. Additionally, walkdowns were performed for procedures supporting response to a station blackout event. During these walkdowns, required equipment was verified to be functional and properly staged.

	Describe inspector actions to verify equipment is available and useable.
	The inspectors reviewed the licensee's Final Safety Analysis Report to understand the implementation and required equipment for station blackout and alternate ac source plant criteria. The inspectors walked down each standby diesel generator looking for deficiencies that might call into question the operability of the diesel. The inspectors reviewed the most recent surveillance test data for each diesel generator and the emergency locker inventory checklist. Additionally, the inspectors searched through the corrective action program database for items that could impact the operability of the standby diesel generators.
	Discuss general results including corrective actions by licensee.
	The licensee discovered several minor issues with the adequacy of properly staging required materials that did not affect the ability to implement and execute the strategies associated with station blackout. These minor issues were entered into the licensee's corrective action program.
Licensee Action	Describe the licensee's actions to verify the capability to mitigate a station blackout event.
b. Demonstrate through walkdowns that procedures for response to a station blackout are executable.	The licensee walked down the station blackout procedure to ensure that all sections of the procedure could be completed. The licensee verified that the equipment necessary to execute the station blackout procedure was staged and ready for operation.
	Describe inspector actions to assess whether procedures were in place and could be used as intended.
	The inspectors performed several plant walkdowns, both independently and in conjunction with licensee personnel, reviewed procedures, and reviewed records to verify the licensee's readiness to execute the station blackout procedures.

	Discuss general results including corrective actions by licensee.
	The licensee discovered several minor issues with the adequacy of station blackout procedures and equipment that did not affect the ability to implement and execute the strategies associated with station blackout. These minor issues were entered into the licensee's corrective action program.

03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design. Refer to Inspection Procedure 71111.01, "Adverse Weather Protection," Section 02.04, "Evaluate Readiness to Cope with External Flooding," as a guideline. The inspection should include, but not be limited to, an assessment of any licensee actions to verify through walkdowns and inspections that all required materials and equipment are adequate and properly staged. These walkdowns and inspections shall include verification that accessible doors, barriers, and penetration seals are functional.

Licensee Action	Describe the licensee's actions to verify the capability to mitigate existing design basis flooding events.
a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.	The licensee reviewed the Final Safety Analysis Report related to external flooding. Columbia Generating Station is considered a dry site because of its elevation. The licensee also reviewed the internal flooding design calculations, reviewed instrumentation, sump pump capabilities, and alarms used for detection of flooding to ensure they were functional. The licensee walked down flood seals and penetrations to ensure they were properly sealed and in good material condition. The licensee generated the population of seals and penetrations to inspect by reviewing civil (construction and architectural), and as built drawings.

	Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.
	The inspectors performed independent reviews of seal penetration inspection results. The inspectors reviewed the licensee's corrective action program to identify current issues with flooding mitigation equipment or barriers. The inspectors reviewed the Final Safety Analysis Report, internal flooding design calculations, and flood seal and penetration design drawings. The inspectors reviewed records of the licensee's preventative maintenance program to ensure installed flood mitigation equipment was properly maintained. The inspectors reviewed the corrective action program to ensure the licensee had taken corrective action on issues that were identified during the walkdowns and reviews.
	Discuss general results including corrective actions by licensee.
	<p>During this review, the licensee confirmed no mitigating actions were necessary for an external flood because of the plants elevation. The licensee verified that the preventive maintenance records for the flood penetration seals were current, and did not re-inspect them for this review.</p> <p>The licensee identified several minor deficiencies with adequacy of flood mitigation equipment. These issues were entered into the licensee's corrective action program.</p>

03.04 Assess the thoroughness of the licensee’s walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment’s function could be lost during seismic events possible for the site. Assess the licensee’s development of any new mitigating strategies for identified vulnerabilities (e.g., entered it into the corrective action program and any immediate actions taken). As a minimum, the licensee should have performed walkdowns and inspections of important equipment (permanent and temporary) such as storage tanks, plant water intake structures, and fire and flood response equipment; and developed mitigating strategies to cope with the loss of that important function. Use Inspection Procedure 71111.21, “Component Design Basis Inspection,” Appendix 3, “Component Walkdown Considerations,” as a guideline to assess the thoroughness of the licensee’s walkdowns and inspections.

Licensee Action	Describe the licensee’s actions to assess the potential impact of seismic events on the availability of equipment used in fire and flooding mitigation strategies.
Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.	The licensee identified equipment that would be used for mitigation of fire and flooding events. The licensee determined whether this equipment was seismically qualified or if it could be evaluated as meeting the general building codes as applicable for the function of the equipment. All of the fire suppression systems were walked down by a qualified fire protection engineer, all of the fire protection program procedures were reviewed for any potential impacts/vulnerabilities, and all portable firefighting equipment was examined for any potential impacts.
	Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.
	The inspectors reviewed the Final Safety Analysis Report to identify equipment important to mitigate fires and floods. The inspectors reviewed the licensee’s fire protection program and flooding mitigation procedures, including natural and destructive phenomena procedures. The inspectors independently walked down the licensee’s equipment to ensure it was available and usable and to ensure that the procedures could be accomplished as written. These walk downs included contingency response equipment, the fire protection system pumps, and the fire main header. The inspectors also reviewed the licensee’s records for testing the Security Order Section B.5.b pump truck.

	<p>Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee because of their reviews.</p> <p>The inspectors verified that equipment was available and useable, and procedures needed to mitigate fire and flood events were in place, and could be used as intended.</p> <p>The licensee discovered several minor issues related to the impact of seismic events on equipment used in fire and flooding mitigation strategies. These minor issues were entered into the licensee's corrective action program.</p> <p>The licensee determined that the Emergency Response Facilities, the Tower Makeup, system, and the fire protection systems, were not seismically qualified, but met the design requirements of the Uniform Building and National Fire Protection Association codes. Floor drain isolation valves and sump level switches (used to mitigate internal flooding) were not seismically qualified.</p>
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EXIT MEETING SUMMARY

The inspectors presented the inspection results to Mr. M. Reddemann and other members of licensee management at the conclusion of the inspection on May 2, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Bekhazi, Maintenance Manager
D. Brown, Operations Manager
K. Christianson, Acting Licensing Supervisor
R. Garcia, Licensing Engineer
D. Gregoire, Acting Regulatory Affairs Manager
C. King, Assistant, Plant General Manager
B. MacKissock, Plant General Manager
D. Mand, Design Engineering Manager
B. Sawatzke, Chief Nuclear Officer
D. Swank, Engineering General Manager
P. Taylor, Operations Training Manager
S. Wood, Organizational Effectiveness Manager

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

03.01 Assess the licensee's capability to mitigate station blackout conditions

DOCUMENTS

<u>NUMBER</u>	<u>DESCRIPTION OR TITLE</u>	<u>REVISION/DATE</u>
	ABN-CONT-VENT	2
	ABN-ASH FALL	15
	ABN-FLOODING	10
	ABN-AIRBORNE-ATTACK	7
	ABN-TSG-007	3
	KADLEC HOSPITAL AGREEMENT	March 25, 2011
	KENNEWICK GENERAL HOSPITAL AGREEMENT	March 25, 2011
	LOURDES MEDICAL CENTER AGREEMENT	March 25, 2011
	BENTON COUNTY AGREEMENT	March 24, 2011

DOCUMENTS

<u>NUMBER</u>	<u>DESCRIPTION OR TITLE</u>	<u>REVISION/DATE</u>
	FRANKLIN COUNTY AGREEMENT	March 22, 2011
	WASHINGTON STATE AGREEMENT	March 28, 2011
	OREGON STATE AGREEMENT	March 25, 2011
	AREVA AGREEMENT	March 25, 2011
	DEPARTMENT OF ENERGY, RICHLAND SITE AGREEMENT	March 25, 2011
	HANFORD FIRE AGREEMENT	March 29, 2011
	FEMA AGREEMENT	March 23, 2011
	FSAR	
1.2.7	EOP/SAG PROGRAM MAINTENANCE	7
5.0.9	EOP/SAG REVISION	7
ABN-CR-EVAC	CONTROL ROOM EVACUATION AND REMOTE COOLDOWN	18
ABN-FPC-LOSS	LOSS OF FUEL POOL COOLING	5
OI-57	OPERATIONS DEPARTMENT ATTENDANCE STANDARDS AND EXPECTATIONS	2
PPM 5.5.3	FIREWATER TO CONDENSATE CROSSTIE	8

CONDITION REPORTS

235030	236006	236015	236015	236030
236035	236045	236047	236052	236054
236058	236064	236067	236071	236157
236202	236202	236204		

ACTION REQUEST

235848

03.02 Assess the licensee's capability to mitigate conditions that result from beyond design basis events

DOCUMENTS

<u>NUMBER</u>	<u>DESCRIPTION OR TITLE</u>	<u>REVISION</u>
	ABN-FLOODING	10
	ABN-FIRE	21
	SOP-CAS-OPS CONTROL AND SERVICE AIR OPERATION	10
	ABN-ELEC-DG3-CROSSTIE/SM7	5
	ABN-ELEC-DG3-CROSSTIE/SM8	5
	ABN-ELEC-LOOP	11
	FSAR	
OSP-ELEC-C701	DIESEL GENERATOR 1 – AC SOURCE OPERABILITY CHECK	12
OSP-ELEC-C702	DIESEL GENERATOR 2 – AC SOURCE OPERABILITY CHECK	11
OSP-ELEC-C703	HPCS DIESEL GENERATOR AC SOURCE OPERABILITY CHECK	12
PPM 5.5.27	REACTOR BUILDING 422 MAX SAFE OPERATING WATER LEVEL MEASUREMENT	4
PPM 5.5.3	FIREWATER TO CONDENSATE CROSSTIE	8
PPM 5.6.1	STATION BLACKOUT	14

CONDITION REPORTS

236030	236035	236054	236064	236067
236157	236202	236204	236618	

ACTION REQUEST

235848

03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design

MISCELLANEOUS

<u>NUMBER</u>	<u>DESCRIPTION OR TITLE</u>	<u>REVISION</u>
	ABN-FLOODING FSAR	10

CONDITION REPORTS

236841	236936	236939	237009	237071
237077	237084	237142	237212	237217
237218	237290			

ACTION REQUEST

235848

03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events

MISCELLANEOUS

<u>NUMBER</u>	<u>DESCRIPTION OR TITLE</u>	<u>REVISION</u>
	ABN-EARTHQUAKE	5
	ABN-FLOODING	10
	ABN-FIRE	21
	FSAR	
15.4.6	ESSENTIAL FIRE RATED PENETRATION SEAL AND ESSENTIAL FIRE AND FLOOD BARRIER OPERABILITY INSPECTION	8

ACTION REQUEST

235848